period in India-Burma, though all direct communication between the Miocene Ocean of Europe and India was disconnected during the Miocene period."

In subdividing the Tertiary System of Burma the author finds that the Upper or Irrawaddi (Pliocene) Series contains the remains of land and freshwater (fluviatile) life, and is based on a conglomerate containing numerous fossil bones, such as those of *Hippotherium* and *Acerotherium*.

(It was on an exposed ledge of this conglomerate that Mr. Noetling discovered, in association with a fossil tooth of *Hippotherium antelopinum*, the stone implement described in 'Natural Science,' vol. x. no. 62, p. 234, 1897.)

The Lower or Arrakan (Miocene) Series in its subdivisions comprehends:—(1) The Upper or Pegu division (Miocene), no Nummulites; (2) The Middle or Bassein division, with Nummulites (Eocene); (3) The Lower or Chin division, without Nummulites (Eocene or Cretaceous?). It is noted that the geology and fossils of the Pegu division have been best known and that those of the Bassein and Chin divisions have not been so closely collected and studied. The Pegu division comprises:—(1) The Yenangyoungian beds, marine, largely littoral, and partly estuarine; and (2) The Promean, of estuarine origin, with its petroleiferous strata.

The description and corollation of the formations and their zones in Lower Burma (pages 17–26) and in Upper Burma (pages 27–38) are followed by tables of the vertical and zonal distribution of the fossil molluscan fauna (pages 19–53). Two hundred and eight species, including some varieties, besides indeterminate forms, are described at pages 101–378.

The relationships of wide territorial types, namely, (1) the Gallic, Pacific, and Mediterranean groups of Palæogene species, and (2) the Identical, Subidentical, and Evolutionary Neogene species (page 98), are defined, and their proportions stated.

The proofs are given of an Eastern migration of European species, assumed by the late H. M. Jenkins in 1864 to have proceeded in Miocene times, but by F. Noetling (in the work before us) as having been in the Eocene period. This extensive subject is carefully and philosophically treated at pages 39–100, and elucidated with elaborate successional and statistical tables.

Noetling agrees with Martin that there is no evidence to warrant the adoption of "Oligocene" for any part of the Indian Tertiary System resting on that regarded as Eocene, whether in Baluchistan, Western India, Burma, Java, Sumatra, or Borneo.

Biologia Centrali-Americana.—Hemiptera-Heteroptera. Vol. II. By G. C. Champion. Pp. xvi & 416. With 22 plates. London, 1897–1901.

The first part of this work, comprising the families Pentatomidæ, Coreidæ, Lygæidæ, Pyrrhocoridæ, and Capsidæ, and elaborated by Mr. Distant, was finished in 1893. The remaining nineteen families of the Heteroptera are worked out by Mr. Champion in the present

volume, which includes 592 species—no less than 289 being new, with 30 new genera. With the species enumerated in Vol. I. the total number of Heteroptera recorded in the 'Biologia' is 1715, rather more than half of which have been treated as new.

Mr. Champion's work is not only faunistic, it is much more. The descriptions are excellent, and there is scarcely one among the nineteen families dealt with, not excepting the Aradidæ and Anthocoridæ, in which the author has not succeeded in finding new, hitherto overlooked characters for distinguishing the species. The sexual characters are carefully noted, and in nearly every genus in more than one of the species. The enumeration of the latter is in most cases preceded by a synoptical table, much facilitating their determination.

Mr. Champion is to be congratulated on having so successfully completed this work, the most important contribution to Hemipterological literature published during the last few years.

E. Bergroth.

Gephyrocrinus Grimaldii, *Crinoïde nouveau provenant des campagnes de la 'Princesse Alice.'* By R. Koehler and F. A. Bather. Mém. Soc. Zool. France, xv. pp. 68–79, 4 text-figures. July 1902.

The specimen herein described was dredged by the Prince of Monaco at a depth of 1786 metres near Hierro in the Canaries, and not, as the authors state, "dans les parages des Açores." It is referred to the Hyocrinidæ, a family represented until recently by a single species, *Hyocrinus Bethellianus*, dredged by the 'Challenger.' A second species, not yet described, was found by the 'Valdivia' near Enderby Land, in the Antarctic. The present specimen is therefore of great interest, all the more so since it is considered to form the type of a new genus differing from *Hyocrinus*, and, indeed, from all known crinoids, in the fact that the food-grooves are carried across from the fourth brachials to the orals on a thin unplated membrane stretching like the web of a duck's foot between each arm and the tegmen. The name *Gephyrocrinus* is suggested by this resemblance to a suspension bridge. Minor points of distinction from *Hyocrinus* are the fusion of the basals, the greater thickness of the cup-plates, the almost complete atrophy of the ambulacrals, and the form of the pinnules, which have not the peculiar arrangement characteristic of *Hyocrinus*. These differences have induced the authors to give a fresh diagnosis of the Hyocrinidæ, differing considerably from that in the 'Challenger' Report.

Although the unique specimen of *G. Grimaldii* is small, somewhat imperfect, and naturally cannot be sacrificed for minute dissection, it has been found possible to give a very exact description of all the details of its external anatomy. These have suggested to one of the authors a renewed investigation of the type of *Hyocrinus Bethellianus*, with results that may be published more fully elsewhere.